Teacher Information
Great Lakes

I. OBJECTIVES

A. Forming Concepts (Introductory) Objectives

1. Name the Great Lakes.
2. Determine the distance from student's residence to the Great Lakes.
3. Define "Alien" (introduced) species.

B. Interpreting Data Objectives

1. Interpret color coded maps of wind speed, wave height, water temperature at various depths, and water elevation (topographic).
2. Graph monthly rainfall data obtained from a chart.
3. Determine the effects that imported species have on native animal and plant populations.
4. Compare graphs of animal populations at the same location over time.
5. Determine the harmful and beneficial effects of Zebra mussels.
6. Determine the three "best" methods of Zebra mussel control and give support for choosing the best three.

C. Applying Principles Objectives

1. Compare maps of wind speed/direction and wave height to determine the relationship between the length of time wind has blown over water and the height of waves.
2. Write a paragraph describing Zebra mussels' economic influences.

3. Determine steps necessary to ensure the recovery of the Great Lakes' ecosystems.

II. Interdisciplinary Uses

A. Social Studies

1. Predict the economic effects on people affected by changes in the Great Lakes ecosystem.

B. Math

1. Interpret graphical data.
2. Convert knots to miles per hour.
3. Convert meters to feet.
4. Graph monthly precipitation data from a table.

C. Language Arts

1. Create written and oral communications about Great Lakes ecological issues.
2. Create written and oral communications about Great Lakes economic issues.

III. Science Standards Coordination

The Great Lakes activity has been designed to incorporate science standards as specified by the National Science Education Standards (NSES) and the National Science Teachers Association (NSTA) Scope, Sequence, and Coordination (SS&C) of Secondary School Science. Only the major topics are listed. For further explanation of each standard see the complete documents available from the addresses below.

NSES-National Academy Press, 2101 Constitution Ave, NW,
Washington, DC 20481
NSTA - 1840 Wilson Blvd, Arlington, VA 22201-3000

NSES	SS&C
transfer of energy	niche, habitat, population,
populations and ecosystems	community
diversity and adaptations of organisms	life cycles
populations, resources, and environment	patterns of reproduction
natural hazards	wind
science and technology in society	precipitation

IV. Advanced Preparation

A. Materials

1. One computer per three or four students
2. One copy of the student activity book for each student or group of students
3. Rulers with metric units

B. Time required to complete the activity

1. Get Info takes about 20 minutes.
2. Gather Data takes about 45 minutes.
3. Applying Principles takes about 20 minutes

C. Teacher Familiarity with Great Lakes Activity

Preview these materials thoroughly. As with all these activities, before using this activity in class, review the sites and work through the activity yourself to learn about the Great Lakes so you can answer questions or direct the students to the answers.

The activity is set up so the students are taken to sites containing information that will be used to answer questions regarding the Great Lakes. The sites contain either the answers or the information from which the students can infer the answers. At the end of the activity, there is a list of enrichment activities and related web sites.

D. Select questions for students to answer.

It would be prudent for you to read the questions students will be expected to answer. These questions are in order of ascending difficulty. Depending on grade level and ability level, you might want to assign specific sections or questions for your students.

E. Student Grouping

These activities can be done individually or in small groups of up to four students. They can also be done at home for extra credit by students who are on-line at home.

F. Software Requirements and Duplication Preparation

1. Download this instructor manual and the student activity book pages from the USA Great Lakes introductory page.
2. Adobe Acrobat Reader is required to download the pages. Click the "Tech Info" icon on the introductory page to download Adobe Acrobat Reader.
3. Duplicate and distribute student pages. Each student should have a copy of the student activity book. Ideally, the student activity book should be distributed and discussed the day before the activity.